

Phase 1 Cultural Heritage Impact Assessment:

**THE ELAND MINE CONSOLIDATION APPLICATION, CONSISTING OF PORTIONS OF THE FARMS
ZILKAATSNEK 439 JQ, ELANDSFONTEIN 440JQ AND DE KROON 444JQ (MAROELABULT) EAST OF BRITS IN THE
LOCAL MUNICIPALITY OF MADIBENG, NORTH WEST PROVINCE**

Prepared for:

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Report No: 2020/JvS/050

- Status: Final
- Date: July 2020
- Revision No: 1
- Date: September 2020-

Submission of the report:

It remains the responsibility of the client to submit the report to the South African Heritage Resources Agency (SAHRA) or relevant Provincial Heritage Resources Agency (PHRA) by means of the online SAHRIS System.

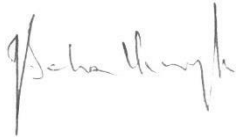


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Specialist competency:

Johan A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 40 years. Originally based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape Province, Northern Cape Province, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 70 papers, most in scientifically accredited journals. During this period, he has done more than 2000 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.



J A van Schalkwyk
Heritage Consultant
September 2020

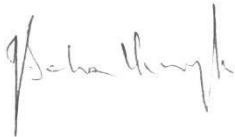
**SPECIALIST DECLARATION**

I, J A van Schalkwyk, as the appointed independent specialist, in terms of the 2014 EIA Regulations (as amended), hereby declare that I:

- ✦ I act as the independent specialist in this application;
- ✦ I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- ✦ regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 (as amended) and any specific environmental management Act;
- ✦ I declare that there are no circumstances that may compromise my objectivity in performing such work;
- ✦ I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- ✦ I will comply with the Act, Regulations and all other applicable legislation;
- ✦ I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- ✦ I have no vested interest in the proposed activity proceeding;

- ✦ I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- ✦ I have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- ✦ I have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application;
- ✦ all the particulars furnished by me in this specialist input/study are true and correct; and
- ✦ I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist



J A van Schalkwyk
July 2020

EXECUTIVE SUMMARY

**Phase 1 Cultural Heritage Impact Assessment:
THE ELAND MINE CONSOLIDATION APPLICATION, CONSISTING OF PORTIONS OF THE FARMS
ELANDSFONTEIN 440JQ, ZILKSAATSNEK 439 JQ AND DE KROON 444JQ (MAROELABULT) EAST OF BRITS IN
THE LOCAL MUNICIPALITY OF MADIBENG, NORTH WEST PROVINCE**

Eland Platinum Mine (EM) is an established (est. 2006) platinum group metals and chrome mining and processing operation and comprises of two mining rights, namely DMR Ref. No: NW 30/5/1/2/2/341MR (Zilkaatsnek Mining Right) and DMR Ref. No: NW 30/5/1/2/2/280MR (Elandsfontein Mining Right), held respectively over portions of the Farms Elandsfontein 440JQ and Zilkaatsnek 439JQ, in the Madibeng Local Municipality of North West Province.

Eland Platinum Proprietary Limited (EP) is in the process of acquiring the underground mine bordering EM in the west, known as the Maroelabult Mine (MM). The MM is also an existing established mining operation (est. 2000's), which is operated under three mining rights NW30/5/1/2/2/151MR, NW30/5/1/2/2/78MR and NW30/5/1/2/2/363MR and was placed under care and maintenance in July 2013.

EP recently concluded a sale agreement to acquire the MM from Barplats, including portions of mining rights NW30/5/1/2/2/151MR and NW30/5/1/2/2/78MR and the entire NW30/5/1/2/2/363MR (MR Sale Portion). The objective of the purchase is to ultimately connect the mining areas with each other.

EP has submitted an application under section 102 of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA) to consolidate the following mining rights into the Elandsfontein Mining Right:

- MR Sale Portion and
- Zilkaatsnek Mining Right.

An integrated environmental authorisation (EA) and waste management license (WML) application under the National Environmental Management Act 107 of 1998 (NEMA) and National Environmental Management: Waste Act 59 of 2008 (NEMWA) was submitted to the Department of Mineral Resources and Energy (DMRE).

The application includes:

- an application for an integrated EA and WML for projects proposed by EP to take the EM mining operations forward (EP Proposed Projects); and
- the consolidation of the existing Environmental Management Programmes ("EMPrs"), EAs and WMLs for EM and the portions of the EMPrs and IEA for the area held under the MR Sale Portion (Sale Portion Area) into the Environmental Impact Assessment / EMPr for the Elandsfontein Mining Right (approved by the DMRE on 21 December 2006 – Ref No: (NW) 30/5/1/2/3/2/1/280EM) (Environmental Licence Consolidation Application).

In accordance with Section 38 of the National Heritage Resources Act, No. 25 of 1999 (NHRA), an independent heritage consultant was appointed by *Jems Pty Ltd* to conduct a cultural heritage assessment, to determine if the EP Proposed Projects would have an impact on any sites, features or objects of cultural heritage significance.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the NHRA, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site, subject to the provisions of section 38(8) of the NHRA (discussed below).

This report describes the methodology used, limitations encountered, heritage features that were identified and recommendations and mitigation measures proposed relevant to this. The HIA consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA's approval.

The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has an insignificant to zero possibility of fossil remains to be found and therefore no palaeontological assessment is required.

Identified sites

During the physical survey, the following sites, features or objects of cultural significance were identified.

- 7.1.1 Huffman (2000) identified some Late Iron Age (LIA) material, contemporary homesteads and possible graves in this area. As the vegetation cover was very dense during the site visit and some recent mining structures were installed here, these sites and features could not be verified.
- 7.3.1 – 7.3.3 Three different burial sites were identified, which are all known to the mine management and have been fenced off.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat due to the EP Proposed Projects is based on the present understanding of the Projects:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.1.1	Archaeological resources	Section 35	Generally protected: Medium significance – Grade IV-B	Low (48)
7.3.1 –		Section 36		Low (16)
7.3.3	Graves, cemeteries and burial grounds		Generally protected: High significance – Grade IV-A	Low (24)
				Low (16)

For the current study, the following mitigation measures are proposed:

- 7.1.1 (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected, significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it.
 - A polygon was created (see the Technical Summary above) representing a safety zone to protect the identified sites (Huffman 2000) and thereby avoid further damage.
- 7.3.1 – 7.3.3 (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected, significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall).

Legal requirements

The legal requirements related specifically to heritage are specified in Section 3 of this report. For the EP Proposed Projects, the assessment has determined that no sites, features or objects of heritage significance occur in the study area. If heritage features are identified during construction, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the EP Proposed Projects be allowed to continue, on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- The various mitigation measures as presented in Section 8 of this report, and summarised above, should be implemented.
- Should archaeological sites or graves be exposed during construction work, this must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.



J A van Schalkwyk
Heritage Consultant September 2020

TECHNICAL SUMMARY

Project description	
Description	Consolidation of three mining rights application
Project name	Eland Platinum Mine Consolidation Application

Applicant
Eland Platinum Proprietary Limited, registration number 2016/427918/07 (EP)

Environmental assessment practitioner
JEMS (Pty) Ltd
Mr S Barkhuizen

Property details													
Province	North West												
Magisterial district	Brits												
Local municipality	Madibeng												
Topo-cadastral map	2527DB												
Farm name	Elandsfontein 440 JQ, Zilkaatsnek 439 JQ &De Kroon 444 JQ												
Closest town	Brits												
Coordinates	Centre point (approximate)												
	<table border="1"> <thead> <tr> <th>No</th> <th>Latitude</th> <th>Longitude</th> <th>No</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25,63895</td> <td>27,87031</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	No	Latitude	Longitude	No	Latitude	Longitude	1	-25,63895	27,87031			
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1	-25,63895	27,87031											
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Development criteria in terms of Section 38(1) of the NHR Act	Yes/No
Construction of road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length	Yes
Construction of bridge or similar structure exceeding 50m in length	No
Development exceeding 5000 sq m	Yes
Development involving three or more existing erven or subdivisions	Yes
Development involving three or more erven or divisions that have been consolidated within past five years	No
Rezoning of site exceeding 10 000 sq m	No
Any other development category, public open space, squares, parks, recreation grounds	No

Land use	
Previous land use	Farming
Current land use	Mining/Vacant

¹ Left click on the icon to open the file in Google Earth, if installed on the computer. Alternatively, right click on the icon. In dialog box, select "Save Embedded File to Disk" and save to folder of choice.

TABLE OF CONTENTS

	Page
SPECIALIST DECLARATION	II
EXECUTIVE SUMMARY.....	III
TECHNICAL SUMMARY	V
COMPLIANCE WITH APPENDIX 6 OF THE 2014 EIA REGULATIONS (AS AMENDED)	IX
1. INTRODUCTION	1
2. LEGISLATIVE FRAMEWORK	2
3. HERITAGE RESOURCES.....	3
4. PROJECT DESCRIPTION	5
5. STUDY APPROACH AND METHODOLOGY	6
6. DESCRIPTION OF THE AFFECTED ENVIRONMENT.....	10
7. SURVEY RESULTS	17
8. IMPACT ASSESSMENT RATINGS AND MITIGATION MEASURES	20
9. MANAGEMENT MEASURES	22
10. CONCLUSIONS AND RECOMMENDATIONS	24
11. REFERENCES	26
12. ADDENDUM	28
1. Indemnity and terms of use of this report	28
2. Assessing the significance of heritage resources and potential impacts	29
3. Mitigation measures	32
4. Relocation of graves	34
5. Curriculum vitae	35

LIST OF FIGURES

	Page
Figure 1. Location of the study area in regional context	5
Figure 2. The sections of the three farms under consideration.....	6
Figure 3. Location of known heritage sites and features in relation to the study area	8
Figure 4. Map indicating the track log of the field survey.	9
Figure 5. The vegetation cover encountered during the field survey	9
Figure 6. The Palaeontological sensitivity of the study area	11
Figure 7. The study region on a map dating to 1899	14
Figure 8. The study region on a map dating to 1925	14
Figure 9. Aerial view of the study region dating to 1949	15
Figure 10. Aerial view of the study region dating to 1964	15
Figure 11. The study region on the 1968 version of the 1:50 000 topographic map	16
Figure 12. Aerial view of the study area dating to 2004	16
Figure 13. Aerial view of the study area dating to 2020	17
Figure 14. Location of heritage sites in the study area	17

LIST OF TABLES

	Page
Table 1: Pre-Feasibility Assessment	7
Table 2: Calculation of the impact on the identified heritage features	20
Table 3A: Construction Phase: Environmental Management Programme for the project	23
Table 3B: Operation Phase: Environmental Management Programme for the project	24

GLOSSARY OF TERMS AND ABBREVIATIONS

TERMS

Bioturbation: The burrowing by small mammals, insects and termites that disturb archaeological deposits.

Cumulative impacts: in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

Debitage: Stone chips discarded during the manufacture of stone tools.

Factory site: A specialised archaeological site where a specific set of technological activities has taken place – usually used to describe a place where stone tools were made.

Historic Period: Since the arrival of the white settlers - c. AD 1830 - in this part of the country.

Holocene: The most recent time period, which commenced c. 10 000 years ago.

Iron Age (also referred to as **Early Farming Communities**): Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and herded cattle, sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age.

Early Iron Age	AD 200 - AD 900
Middle Iron Age	AD 900 - AD 1300

Later Iron Age

AD 1300 - AD 1830

Midden: The accumulated debris resulting from human occupation of a site.

Mitigation, means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

National Estate: The collective heritage assets of the Nation.

Pleistocene: Geological time period of 3 000 000 to 20 000 years ago.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

Early Stone Age	2 500 000 - 250 000 Before Present
Middle Stone Age	250 000 - 40 000 - 25 000 BP
Later Stone Age	40-25 000 - until c. AD 200

Tradition: As used in archaeology, it is a seriated sequence of artefact assemblages, particularly ceramics.

ACRONYMS and ABBREVIATIONS

AD	Anno Domini (the year 0)
ASAPA	Association of Southern African Professional Archaeologists
BP	Before Present (calculated from 1950 when radio-carbon dating was established)
CE	Common Era (the year 0)
CS-G	Chief Surveyor-General
DMRE	Department of Mineral Resources and Energy
EA	Environmental authorisation
ECO	Environmental Control Officer
EIA	Early Iron Age
EM	Eland Platinum Mine
EMPr	Environmental Management Programme
EP	Eland Platinum Proprietary Limited
ESA	Early Stone Age
HIA	Heritage Impact Assessment
I & AP's	Interested and Affected Parties
ICOMOS	International Council on Monuments and Sites
LIA	Late Iron Age
LSA	Later Stone Age
MIA	Middle Iron Age
MM	Maroelabult Mine
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
MSA	Middle Stone Age
NEMA	National Environmental Management Act 107 of 1998
NEMWA	National Environmental Management: Waste Act 59 of 2008
NHRA	National Heritage Resources Act 25 of 1999
PHRA	Provincial Heritage Resources Agency
SAHRA	South African Heritage Resources Agency
WUL	Water Use Licence
WML	Waste management licence

COMPLIANCE WITH APPENDIX 6 OF THE 2014 EIA REGULATIONS (AS AMENDED)

Requirements of Appendix 6 – GN R982	Addressed in the Specialist Report
1. (1) A specialist report prepared in terms of these Regulations must contain- a) details of the- i. specialist who prepared the report; and ii. expertise of that specialist to compile a specialist report including a curriculum vitae;	Front page Page i Addendum Section 5
b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Page iii
c) an indication of the scope of, and the purpose for which, the report was prepared;	Section 1
(cA) an indication of the quality and age of base data used for the specialist report;	Section 4
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 7
d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 1.2.1
e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 5.2
f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 7; Figure 14
g) an identification of any areas to be avoided, including buffers;	Section 8
h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Figure 14 Section 7
i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2
j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 7
k) any mitigation measures for inclusion in the EMPr;	Section 8 & 10
l) any conditions for inclusion in the environmental authorisation;	Section 10
m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 9
n) a reasoned opinion- i. whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and ii. if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 10 Section 10
o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	-
p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	To be included in final report after public participation.
q) any other information requested by the competent authority.	-
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	-

**THE ELAND MINE CONSOLIDATION APPLICATION, CONSISTING OF PORTIONS OF THE FARMS
ELANDSFONTEIN 440JQ, ZILKSAATSNEK 439 JQ AND DE KROON 444JQ (MAROELABULT) EAST OF BRITS IN
THE LOCAL MUNICIPALITY OF MADIBENG,
NORTH WEST PROVINCE**

1. INTRODUCTION

1.1 Background

EM is an established (est. 2006) platinum group metals and chrome mining and processing operation and comprises of two mining rights, namely the Zilkaatsnek Mining Right and Elandsfontein Mining Right (EM Mining Rights), held respectively over portions of the Farms Elandsfontein 440JQ and Zilkaatsnek 439JQ, in the Madibeng Local Municipality of North West Province.

EP is in the process of acquiring the underground mine bordering EM in the west, known as the Maroelabult Mine (MM). The MM is also an existing established mining operation (est. 2000's), which is operated under three mining rights NW30/5/1/2/2/151MR, NW30/5/1/2/2/78MR and NW30/5/1/2/2/363MR and was placed under care and maintenance in July 2013.

EP recently concluded a sale agreement to acquire the MM from Barplats, including the MR Sale Portion. The objective of the purchase is to ultimately connect the mining areas with each other.

EP has submitted an application under section 102 of the MPRDA to consolidate the following mining rights into the Elandsfontein Mining Right:

- MR Sale Portion and
- Zilkaatsnek Mining Right.

An integrated EA and WML application under the NEMA and NEMWA was submitted to the DMRE.

The application includes:

- an application for an integrated EA and WML for the EP Proposed Projects (EA/WML Application); and
- the consolidation of the existing EMPrs, EAs and WMLs for EM and the portions of the EMPrs and IEA for the Sale Portion Area into the Environmental Impact Assessment / EMPr for the Elandsfontein Mining Right (approved by the DMRE on 21 December 2006 – Ref No: (NW) 30/5/1/2/3/2/1/280EM) (Environmental Licence Consolidation Application), (collectively the (Environmental Application)

Jems Pty Ltd was contracted by the EP as the independent environmental consultant for the Environmental Application and the application to consolidate the WULs for EM and MM.

In accordance with Section 38 of the NHRA, an independent heritage consultant was appointed by *Jems Pty Ltd* to conduct a cultural heritage assessment to determine if the EP Proposed Projects would have an impact on any sites, features or objects of cultural heritage significance.

South Africa's heritage resources, also described as the 'national estate', comprise a wide range of sites, features, objects and beliefs. However, according to Section 27(18) of the National Heritage Resources Act, No. 25 of 1999 (NHRA), no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site. Section 38(8) of the NHRA however makes provision for the assessment of heritage impacts as part of an Environmental Impact Assessment process and, if such an assessment complies with the NHRA, a separate application for consent under the NHRA is not required

This report forms part of the Environmental Impact Assessment as required by the EIA Regulations, in terms of the NEMA and is intended for submission to the South African Heritage Resources Agency (SAHRA) and DMRE.

1.2 Terms and references

The aim of a full HIA investigation is to provide an informed heritage-related opinion about the proposed development by an appropriate heritage specialist. The objectives are to identify heritage resources (involving site inspections, existing heritage data and additional heritage specialists if necessary); assess their significances; assess alternatives in order to promote heritage conservation issues; and to assess the acceptability of the proposed development from a heritage perspective. The result of this investigation is a HIA report indicating the presence/absence of heritage resources and how to manage them in the context of the proposed development. Depending on SAHRA's acceptance of this report, the developer may receive permission to proceed with the proposed development, on condition of successful implementation of proposed mitigation measures.

1.2.1 Scope of work

Three different HIA surveys have been done in the study region in the past – Huffman (2000) on Maroelabult (De Kroon) and Pistorius (2006, 2010) on Elandsfontein. The aim of the present study was therefore not to re-survey the total area covered by the three mining rights, but rather to determine the state of the sites and features that were previously identified. This included:

- Conducting a desk-top investigation rights of the areas; and
- A visit to the areas on which the EP Proposed Projects will be conducted (being the Sale Portion Area and the area held under EM Mining Rights on which the EM surface infrastructure is situated (referred to as the Project Area).

The Project Area includes the portions of the Farms below:

- Elandsfontein 440JQ: Remaining Extent (RE) of 58 (a portion of 19); REs of 59 and 63 (portions of 58); RE of 32 (a portion of 18); 61 (a portion of 32); 30 and 39 (portions of 17); 37 (a portion of 16);
- Zilkaatsnek 439JQ: RE of 58; 80, 81, 84 and 87 (portions of 58); and 97 (a portion of 4);
- De Kroon 444 JQ: R/E of 48; R/E of 49; R/E of 141 and 142 (portions of 49); 353; R/E of 50; 51; 52; 119; 121; 122; 123; R/E of 165; Portion 333 (a portion of 165); R/E of 157, 166, 167 and 168 (portions of 47); portions of 296 and 297; 115; 160; and 159 and 161 (portions of 115).

The objectives were to:

- Determine the status of the identified heritage resources;
- Document any possible newly discovered archaeological, cultural and historic sites within the Project Area;
- Identify any potential 'fatal flaws' related to the EP Proposed Projects;
- Evaluate the potential impacts of construction, operation and maintenance of the EP Proposed Projects on archaeological, cultural and historical resources;
- Recommend mitigation measures to ameliorate any negative impacts on areas of archaeological, cultural or historical importance; and
- Provide guideline measures to manage any impacts that might occur during the EP Proposed Projects' construction and implementation phases.

1.2.2 Assumptions and Limitations

The investigation has been influenced by the following factors:

- It is assumed that the description of the EP Proposed Projects, provided by the client, is accurate;
- The unpredictability of buried archaeological remains;
- No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities;

- It is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment is sufficient and that it does not have to be repeated as part of the HIA; and
- The available 1:50 000 topographic maps are outdated and, in some cases, indicate wrong information, such as incorrect farm names.

2. LEGISLATIVE FRAMEWORK

2.1 Background

HIAs are governed by national legislation and standards and International Best Practise. These include:

- South African Legislation
 - National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA);
 - Mineral and Petroleum Resources Development Act, 2002 (Act No. 22 of 2002) (MPRDA);
 - National Environmental Management Act 1998 (Act No. 107 of 1998) (NEMA); and
 - National Water Act, 1998 (Act No. 36 of 1998) (NWA).
- Standards and Regulations
 - South African Heritage Resources Agency (SAHRA) Minimum Standards;
 - Association of Southern African Professional Archaeologists (ASAPA) Constitution and Code of Ethics;
 - Anthropological Association of Southern Africa Constitution and Code of Ethics.
- International Best Practise and Guidelines
 - ICOMOS Standards (Guidance on Heritage Impact Assessments for Cultural World Heritage Properties); and
 - The UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (1972).

2.2 Heritage Impact Assessment Studies

South Africa's unique and non-renewable archaeological and palaeontological heritage sites are 'generally' protected in terms of the NHRA, (Section 35) and may not be disturbed at all without a permit from the relevant heritage resources authority, subject to the provisions of section 38(8) of the NHRA.

The NHRA, Section 38 contains requirements for Cultural Resources Management and prospective developments:

"38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as:

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site:*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*
- (e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development."*

And:

“38 (3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

- (a) The identification and mapping of all heritage resources in the area affected;*
- (b) an assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;*
- (c) an assessment of the impact of the development on such heritage resources;*
- (d) an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;*
- (e) the results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;*
- (f) if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and*
- (g) plans for mitigation of any adverse effects during and after the completion of the proposed development.”*

And:

“38 (8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environment Affairs and Tourism, or the Minerals Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regard to such development have been taken into account prior to the granting of the consent.

NEMA and the EIA Regulations, 2014 require a HIA if a development will impact on heritage resources. The DMRE is the “consenting” authority in terms of the EIA Regulations, 2014 and Section 38 of the NHRA will be satisfied if an HIA satisfies the requirements of Section 38(3) of the NHRA and the comments of SAHRA are considered by the DMRE.

3. HERITAGE RESOURCES

3.1 The National Estate

The NHRA defines the heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations that must be considered part of the national estate to include:

- places, buildings, structures and equipment of cultural significance;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features of cultural significance;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds, including-
 - ancestral graves;
 - royal graves and graves of traditional leaders;
 - graves of victims of conflict;
 - graves of individuals designated by the Minister by notice in the Gazette;
 - historical graves and cemeteries; and
 - other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- sites of significance relating to the history of slavery in South Africa;

- movable objects, including-
 - objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
 - objects to which oral traditions are attached or which are associated with living heritage;
 - ethnographic art and objects;
 - military objects;
 - objects of decorative or fine art;
 - objects of scientific or technological interest; and
 - books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3.2 Cultural significance

In the NHRA, Section 2 (vi), it is stated that “cultural significance” means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This is determined in relation to a site or feature’s uniqueness, condition of preservation and research potential.

According to Section 3(3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- sites of significance relating to the history of slavery in South Africa.

A matrix (see Section 2 of Addendum) was developed whereby the above criteria were applied for the determination of the significance of each identified site. This allowed some form of control over the application of similar values for similar identified sites.

4. PROJECT DESCRIPTION

4.1 Site location

The study area (being the Project Area) is located between the R566 and the N4, approximately 7km east of the Brits central business district in the Madibeng Local Municipality of North West Province (Fig. 1). For more information, see the Technical Summary on p. V above.

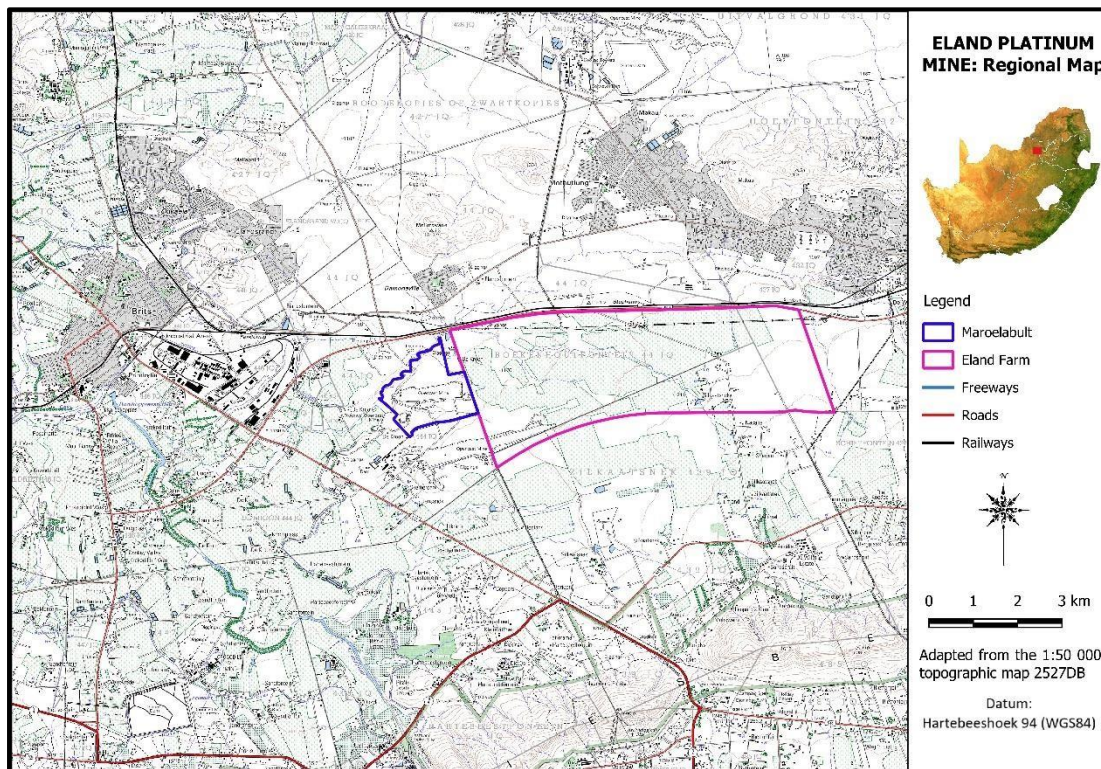


Figure 1. Location of the study area in regional context

(Please note that this, the latest available topographic map, 2001, does not reflect the current state of development in the region. In addition, the southern section of the farm Elandsfontein 440JQ is wrongly identified as Boekenhoutfontein 44JQ – see Fig. 2 below for the correct farm names and numbers)

4.2 Development proposal

EP recently purchased the Sale Portion Area adjacent to the EM (Fig. 2). The objective of the purchase is to ultimately connect the mining areas held under the three mining rights with each other. The following activities are included in the EP Proposed Projects:

- Consolidation of the three mining rights and various EMPR(s), EAs and WMLs relevant to the rights;
- Consolidating the EM and MM WULs;
- Construction of two Run of Mine Stockpiles at EM;
- Developing of two Ventilation shafts at EM;
- Mining of the Merensky Reef on EM, including associated infrastructure, Overburden Stockpiles and Waste Rock Dumps (“WRDs”);
- Mining of the UG1 reef inside the current Tailings Storage Facilities paddock 2, 3 and 4 at EM;
- Backfilling of existing opencast pits at EM with tailings and the construction of a pipeline to convey the wet tailings from the Concentrator Plant to the opencast pits and a return water pipeline between the existing TSF return water sump and opencast pits;
- Underground mining at MM, including the boundary pillar between EM;
- Water management infrastructure linking EM and MM, including expansion and construction of pump stations and pipelines for the conveying of dirty water and tailings between EM and MM;
- Construction of an electrical 11kV substation, distribution line and associated infrastructure at MM;
- Construction and operation of a Chrome Flotation Plant and associated infrastructure at the MM shaft; and
- WRD re-processing at MM.

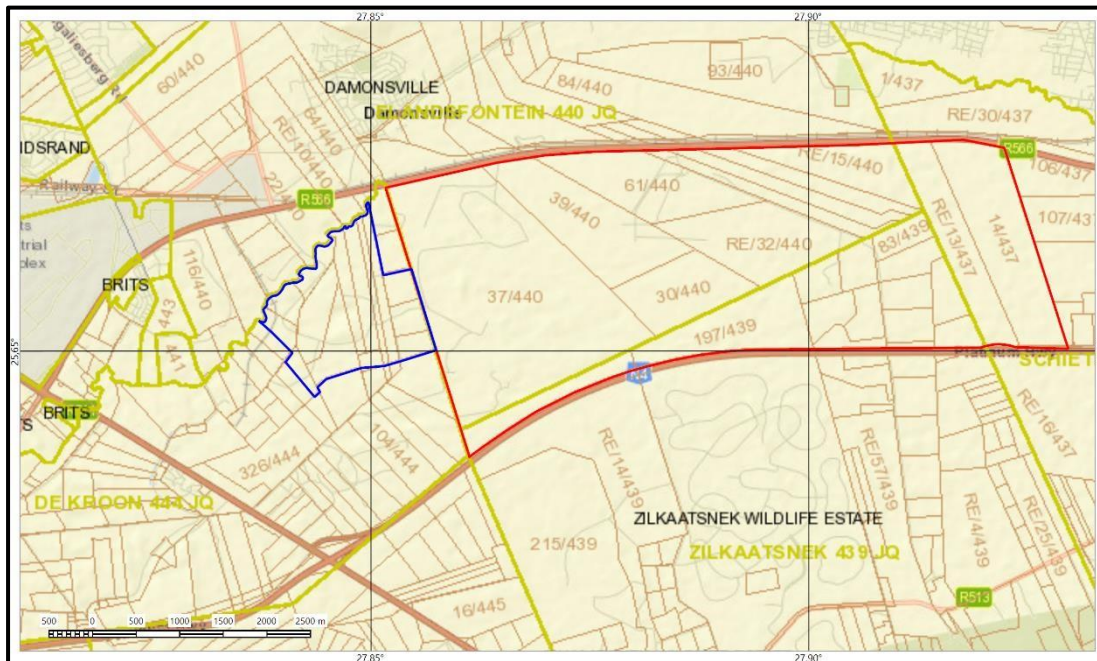


Figure 2. The sections of the two farms under consideration
(After: <https://csg.esri-southafrica.com/portal/apps/webappviewer>)

5. STUDY APPROACH AND METHODOLOGY

5.1 Extent of the Study

This survey and impact assessment cover all facets of cultural heritage located in the study area, as presented in Section 4 above and illustrated in Figures 1 & 2.

5.2 Methodology

5.2.1 Pre-feasibility assessment

5.2.1.1 Survey of the literature

A survey of the relevant literature was conducted, with the aim of reviewing the previous research done and determining the potential of the area. In this regard, various anthropological, archaeological and historical sources were consulted – see list of references in Section 11.

- Information on events, sites and features in the larger region were obtained from these sources.

5.2.1.2 Survey of heritage impact assessments (HIAs)

A survey of HIAs done for projects in the region by various heritage consultants was conducted with the aim of determining the heritage potential of the area – see list of references in Section 11.

- Information on sites and features in the larger region were obtained from these sources.

5.2.1.3 Data bases

The *Heritage Atlas Database*, various SAHRA databases, the *Environmental Potential Atlas*, the *Chief Surveyor General* and the *National Archives of South Africa* were consulted.

- Database surveys produced several sites located in the larger region of the proposed mining development.

5.2.1.4 Other sources

Aerial photographs and topocadastral and other maps were also studied - see the list of references below.

- Information of a very general nature was obtained from these sources

The results of the above investigation are presented in Table 1 and Figure 3 below – see list of references in Section 11 – and can be summarised as follows:

- Stone Age tools, dating to the MSA occur as low-density scatters on some outcrops in the larger region;
- Stone walled sites dating to the LIA occur to the north, west and east of the study area;
- Historic structures, inclusive of buildings, monuments and bridges, occur mostly in an urban environment, although they are also found sporadically on farms in the region; and
- Formal and informal burial sites occur sporadically throughout the larger region, but mostly in urban areas.

Based on the above assessment, the probability of cultural heritage sites, features and objects occurring in the study area is deemed to be low.

Table 1: Pre-Feasibility Assessment

Category	Period	Probability	Reference
Landscapes			
Natural/Cultural		None	Aerial photographs; Historic maps
Early hominin	Pliocene – Lower Pleistocene		
	Early hominin	None	-
Stone Age	Lower Pleistocene – Holocene		
	Early Stone Age	Low	Heritage Atlas Database
	Middle Stone Age	Low	Heritage Atlas Database
	Later Stone Age	Low	Wadley (1988)
	Rock Art	Low	Heritage Atlas Database; Wadley (1988)
Iron age	Holocene		
	Early Iron Age	Low	Huffman (1993, 2007);
	Middle Iron Age	None	-
	Late Iron Age	Low	Huffman (2000, 2007); Mason (1969); Pistorius (2006, 2010); Van Schalkwyk (20007a & b; 2010a & b)
Colonial period	Holocene		
	Contact period/Early historic	Possible	Becker (1972); Carruthers (1990); Engelbrecht <i>et al</i> (1955); Horn (1998); Rasmussen (1978); Van Schalkwyk (20007a & b; 2010a & b)
	Recent history	Possible	Carruthers (1990); Cloete (2000); Horn (1998); Pistorius (2006, 2010)
	Industrial heritage	Low	Heritage Atlas Database

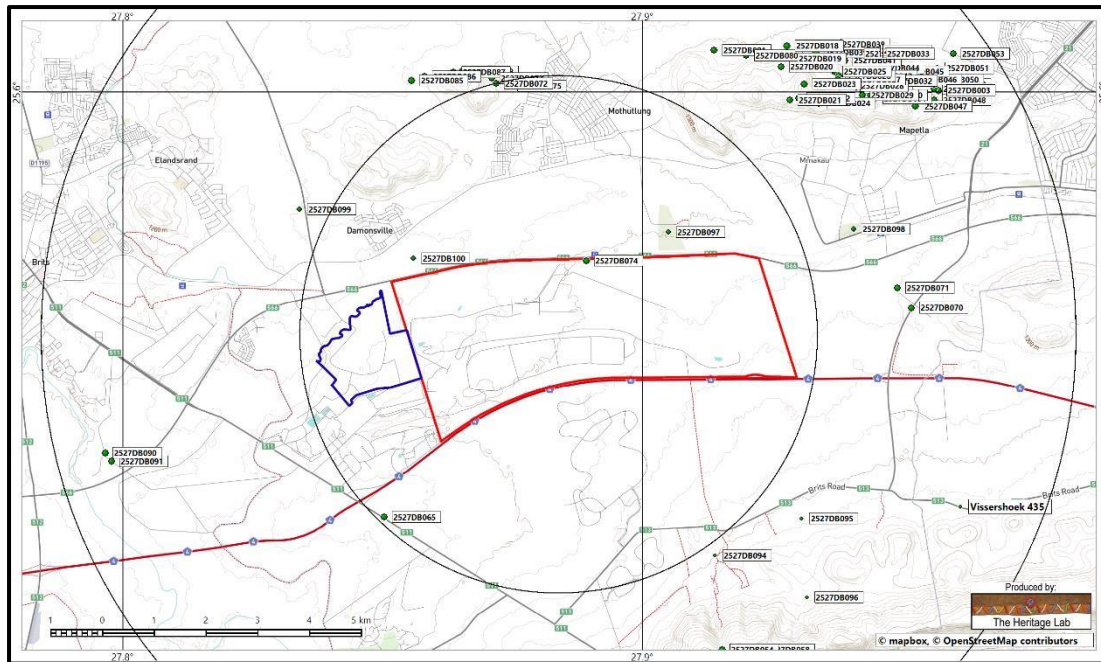


Figure 3. Location of known heritage sites and features in relation to the study area (Circles spaced at a distance of 5km: heritage sites = coded green dots)

5.2.2 Field survey

The field survey was done according to generally accepted archaeological practices and was aimed at locating heritage sites, features and objects. The area that had to be investigated was identified by the *Jems Pty Ltd* by means of maps and *.kml* files indicating the mining areas. This, as well as the sites and features that were previously identified, was loaded onto a Samsung digital device and used in Google Earth during the field survey to access the area.

The site was visited on 21 July 2020. During the site visit, archaeological visibility was much limited as most of the area was covered by tall grass and dense shrub growth – see Fig. 5 below.

- Due to the dense vegetation cover encountered, use was made of internal roads to access the area, after which the various sites and features identified in the pre-feasibility study were investigated on foot – see Fig. 4 below.
- From the image in Fig. 4 it is also clear as to how many of the features that were originally identified have disappeared due to mining activities.

5.2.3 Consultation

During the site visit, the specialist was accompanied by Ms Keneilwe Makwela, the inhouse Environmental Specialist at EM.

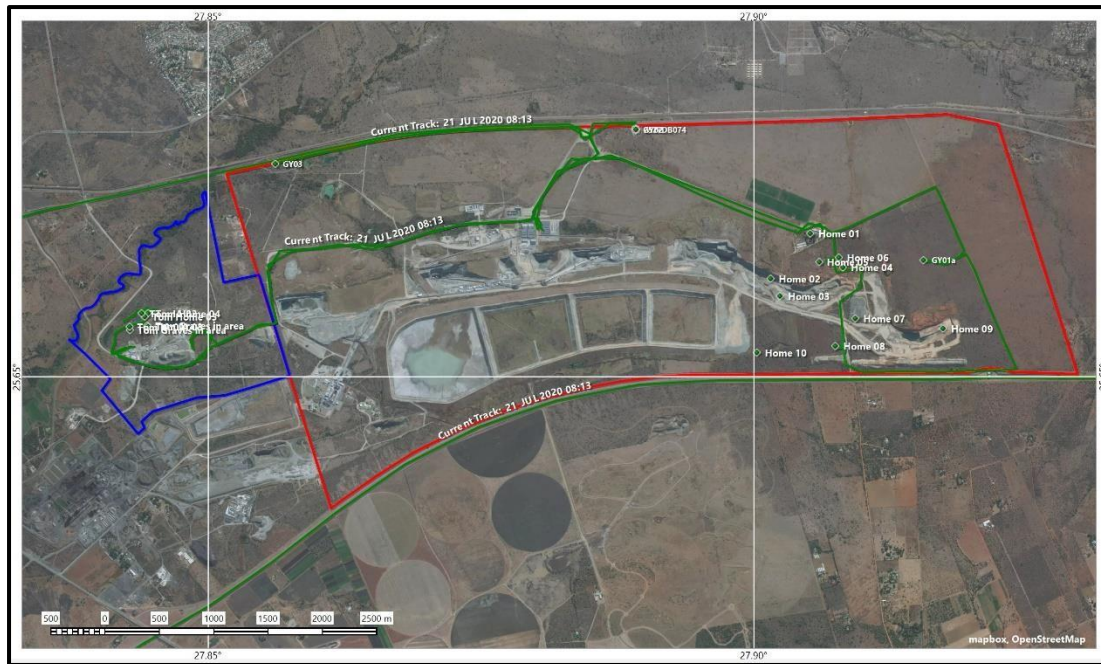


Figure 4. Map indicating the track log of the field survey.
(Site = blue & red polygons; track log = green line)

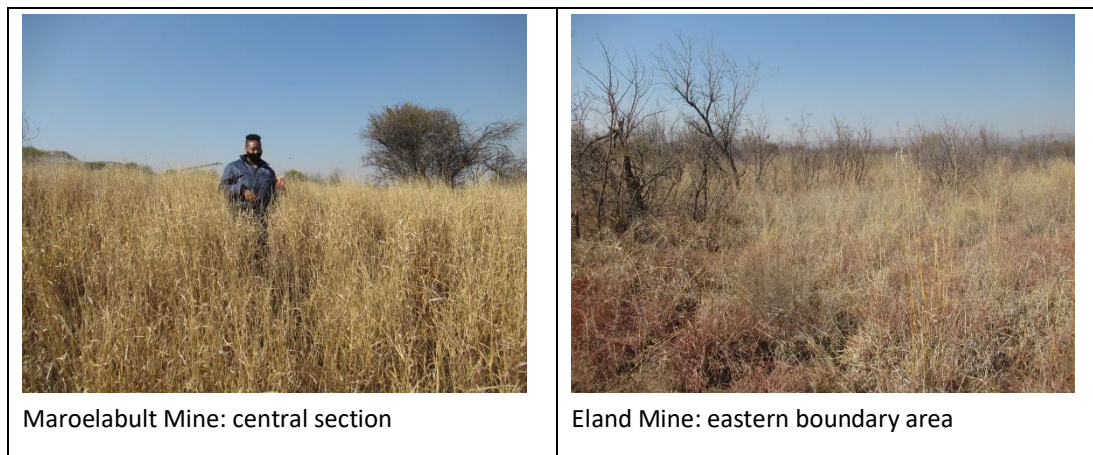


Figure 5. The vegetation cover encountered during the field survey

5.2.4 Documentation

All sites, objects and structures that were identified are documented according to the general minimum standards accepted by the archaeological profession. Coordinates of individual localities are determined by means of the *Global Positioning System* (GPS) and plotted on a map. This information is added to the description, to facilitate the identification of each locality. Map datum used: Hartebeeshoek 94 (WGS84).

The track log and identified sites were recorded by means of a Garmin Oregon 550 handheld GPS device. Photographic recording was done by means of a Canon EOS 550D digital camera. Geo-rectifying of the aerial photographs and historic maps was done by means of a professional software package: ExpertGPS.

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

6.1 Natural Environment

The study area lies in a highly transformed environment, which was much impacted on by agricultural and mining activities. The original vegetation is classified as Marikana Thornveld, a savanna biome, falling in the Central Bushveld Bioregion (Muncina & Rutherford 2006). However, most of this has been transformed due to former farming and recent mining activities (Fig. 5).

The geology of the southern section of the study area is made up of pyroxenite, harzburgite and norite of the Rustenburg Layered Suite of the Bushveld Complex. To the north this changes to gabbro and norite with interlayered anorthosite, also of the Rustenburg Layered Suite of the Bushveld Complex. A thin band of quartzite, shale and subordinate subgreywacke of the Rayton Formation of the Pretoria Group of the Transvaal Supergroup runs through the central section of the study area.

The topography of the region is classified as hills and plains. However, no hills or outcrops occur in the study area. A small unnamed tributary stream of the Crocodile River is located on the western boundary of the study area.

The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area (Fig. 6) has an insignificant to zero possibility of fossil remains to be found and therefore no palaeontological assessment is required.

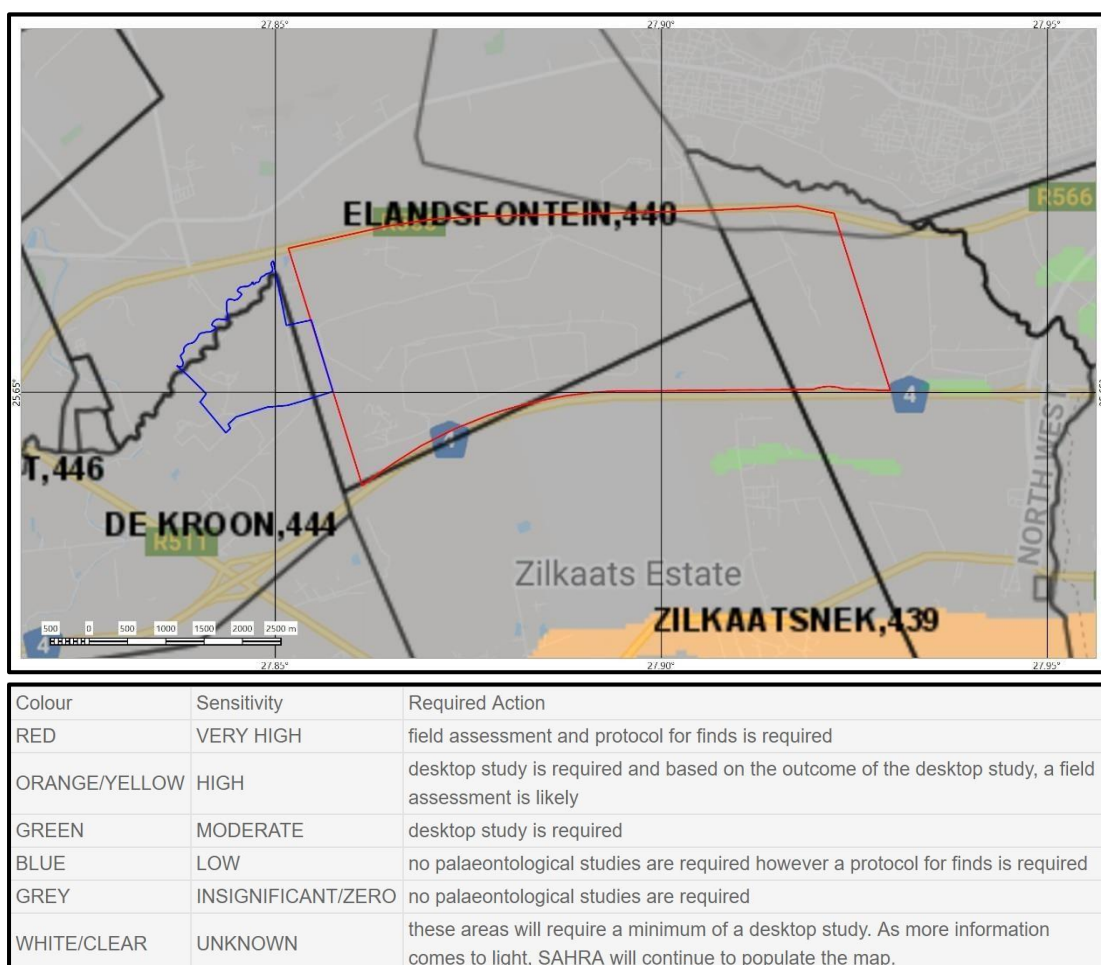


Figure 6. The Palaeontological sensitivity of the study area

6.2 Cultural Landscape

The aim of this section is to present an overview of the history of the larger region in order to eventually determine the significance of heritage sites identified in the study area, within the context of their historic, aesthetic, scientific and social value, rarity and representivity.

The affected area falls within a transitional environmental region in the province known as the Bankenveld, situated between the Highveld in the south and the Pyramid Hills in the north. As a result of peculiar geo-processes, in particular the formation of the Bushveld Complex, a landscape comprising a latitudinal series of hills and valleys came into existence, which fostered early human settlement and later accommodated a series of communities and cultures.

After the formation of the Magaliesberg, a continuous process of weathering, erosion and faulting resulted in the formation of neks (such as Saartjesnek) and poorts (such as Hartbeespoort). Hartbeespoort was considered ideal for the construction of a dam to store water for irrigation by early white farmers, which eventually led to the construction of the present dam in the early 1920s.

6.2.1 Stone Age

An abundance of water, lush natural vegetation, large numbers of game, mild climate and the presence of quartzite for making tools and weapons were factors that attracted Stone Age communities to the area about half a million years ago. Evidence of periodic occupation since the Early Stone Age (ESA) is found at the Wonderboom Hand-Axe Site close to Wonderboom Nek in Pretoria. This site is one of the richest ESA

depositories in South Africa. Signs of occupation by MSA groups have also been found on the Magaliesberg and along river courses. The Late Stone Age (LSA) is also well represented in the area, probably because LSA communities preferred to occupy rock shelters like caves and cliffs. During the latter part of the LSA the Hartbeespoort Dam area was probably occupied from time to time by the ancestors of the San (Bushman) people. The larger region is known for its Stone Age sites, such as Rissik, Jubilee Shelter, Silkaatsnek, Elizabeth Shelter, Cave James, Serpent Quarry, Xanadu, Hope Hill Shelter and Kloofendal Shelter (Wadley 1988).

6.2.2 Iron Age

The expansion of early farmers, who, among other things, cultivated crops, raised livestock, made ceramic containers (pots), mined ore and smelted metals, occurred in this area between AD 400 and AD 1100 and brought the Early Iron Age (EIA) to South Africa. They settled in semi-permanent villages. These communities migrated from the Lowveld and coastal areas to the higher regions in the interior (such as the Bankenveld) during the latter part of the EIA. An important early settlement site with evidence of iron smelting and working is located near Broederstroom (provincial heritage site) in the Brits area (Huffman 1993). Sites were found within 100m of water, either on a riverbank or at the confluence of streams.

New groups succeeded these EIA communities about 600 years ago, speaking Bantu languages like Nguni and Tswana-Sotho. By that time, groups of Tswana and Ndebele speaking people were moving into the area, occupying the different hills and outcrops, using the ample resources such as grazing, game and metal ores. These LIA farmers were moving to new farming areas, like the Highveld and Bankenveld, where, as a result of climate changes, grasslands provided enough grazing. Because of a lack of trees in many areas, settlements were built with natural stone, mud and thatch. Remains of such stonewalled settlements and kraals can be found all over the Magaliesberg.

In 1821 a Nguni group, led by Mzilikazi, left KwaZulu-Natal and moved to the regions north of the Vaal River. Their numbers increased when they absorbed other refugees and conquered some of the indigenous communities. This was the origin of the Matabele (Ndebele) empire. Having established themselves originally in Sekhukhuneland (Mpumalanga and Limpopo Provinces), they relocated to the Tshwane region in the early 1830s and conquered the local Sotho, Tswana and Ndebele-speaking communities. It is possible that Mzilikazi established a major settlement, known as eKungwini, near Wonderboompoort. The Matabele relocated again to the Marico region (North-West Province) in the mid-1830s.

The *difaqane* coincided with the penetration of the interior of South Africa: travellers and hunters such as Cornwallis Harris and Andrew Smith, traders Robert Schoon and Andrew McLuckie, and missionaries James Archbell and Robert Moffat (Carruthers 2007).

6.2.3 Historic period

The Matabele conquest was followed by permanent occupation by white settler-farmers in the mid- 1840s, and hence few traces of Iron Age occupation by earlier communities have been left behind. Voortrekker farmers established the farms that today form the area around Meerhof. These farms were subdivided many times over in more recent years and more farmsteads were established. Gradually the entire area was divided into farms. However, it was only since the 1880s that these farms were formally surveyed and mapped, and when not only their names but also the names of rivers and other features became permanent fixtures on maps.

The Second South African War (1899-1902) Battle of Silkaatsnek (11 July 1900) took place in the area, and some elements of the British garrisons guarding Silkaatsnek and Kommandonek were located where Melodie is today.

Before the Second South African War, General Hendrik Schoeman (son of Stephanus Schoeman) constructed a primitive dam in the Crocodile River. The potential of damming the river at the poort was recognised after the War. Between 1905 and 1910 the Transvaal Department of Irrigation conducted various preliminary investigations, which led to the passing of the Hartbeespoort Irrigation Scheme (Crocodile River) Act (Act 32) of 1914. This Act authorised the construction of a large dam in the Hartbeespoort gorge. World War I delayed the project, which was successfully completed only in 1923.

Johan Schoeman, son of General Hendrik Schoeman and grandson of the first owner of the farm, now covered by the lake, established the townships of Kosmos, Schoemansville and Meerhof (the latter on the Farm Rietfontein 485 JQ) in 1923 on the shores of the lake.

The existing railway line passing the study area was originally completed in 1906, but, due to continuous increase in freight weight and usage, has been much upgraded in the past.

During the past 40 years, up until the early 1990s, the area to the north of the study area has been part of the former Bophuthatswana, where large numbers of so-called “surplus” people were resettled after being removed from “white” areas. This led to the rapid increase in urban development in the region. Several well-known townships were developed: GaRankuwa, Soshanguve, Winterveld, etc.

6.3 Site specific review

Although landscapes with cultural significance are not explicitly described in the NHRA, they are protected under the broad definition of the National Estate (Section 3): Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. The examination of historical maps and aerial photographs help us to reconstruct how the cultural landscape has changed over time as is show how humans have used the land.

Older maps do not give much information on the region, its development and occupation. Jeppe’s Map (Fig. 7) dating to 1899 indicates that the region has been surveyed and divided into farms. A single road, travelling from Pretoria to Rustenburg, is indicated south of the study area. A later map (Fig. 8), dating to 1925, shows the same road to the south, as well as the railway line and the various stations that were completed in 1906. However, it gives no other information.

During the 1960s, early 1970s, the railway line was rerouted, cutting out most of the bends. In addition, some of the stations/halts were relocated from their original position.

The official aerial photographs (Fig. 9 & 10) shows that the area was subjected to intense farming (agricultural fields) activities. Some roads and tracks crisscross the study area, increasing from the older (1949) version to the more recent (1964) image. It is also possible to discern some non-agricultural activities, such as farmsteads and homesteads – which correspond to what is indicated on the later topographic map (Fig. 11) dating to 1969. On this latter map, various homesteads are indicated in the Maroelabult Mining area, but as yet no mining activities are indicated.

The last two images, Fig. 12 and Fig. 13, dating respectively to 2004 and 2020, shows how the mining activities have increased in the study area, in effect obliterating much of the previously identified (Huffman 2000; Pistorius 2006, 2010) built features.

It should be stated clearly that the farmsteads and homesteads identified by both Huffman (2000) and Pistorius (2006, 2010) were accorded low significance by them and therefore mitigation measures, i.e. further documentation, was not required.

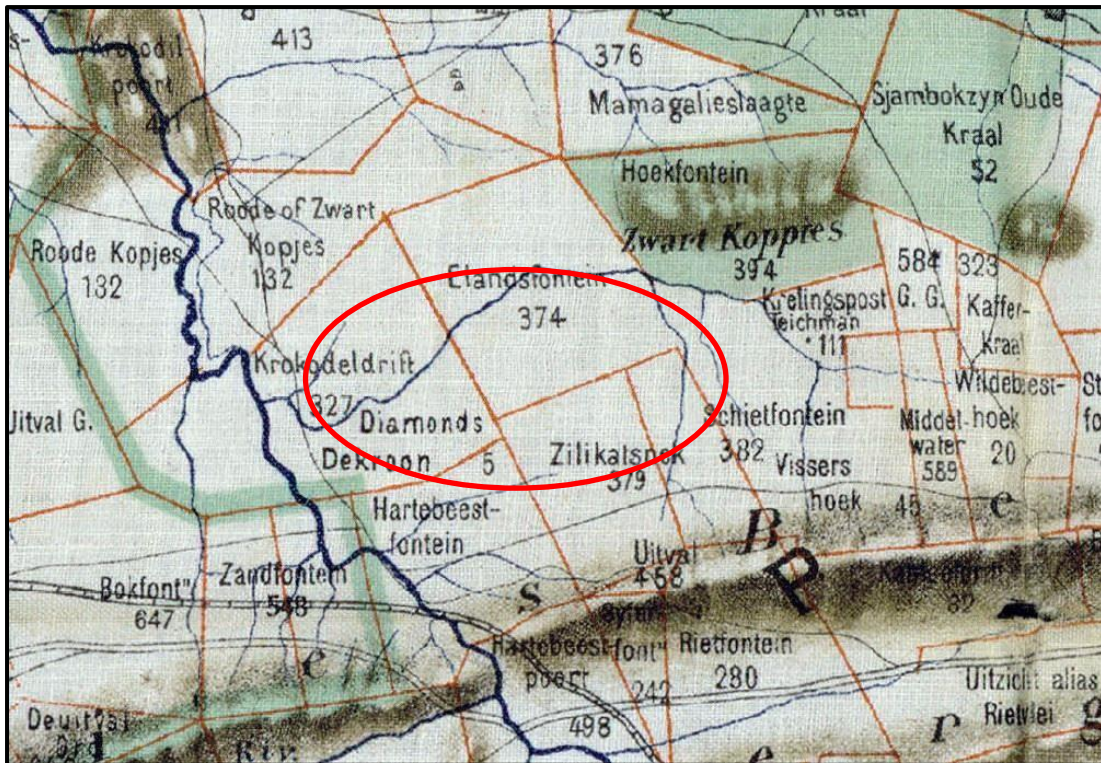


Figure 7. The study region on a map dating to 1899
(Map: Jeppe's Map of the Transvaal or S A Republic and surrounding Territories)

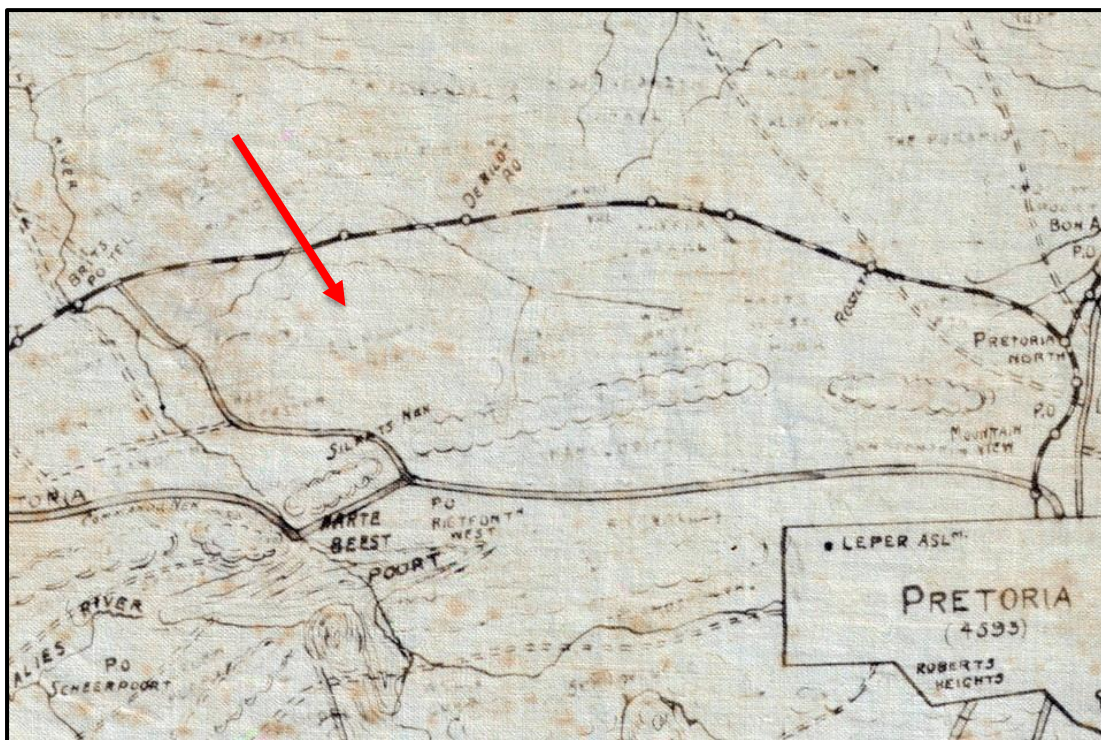


Figure 8. The study region on a map dating to 1925
(Map: Roads around Hartbeestpoort District)



Figure 9. Aerial view of the study region dating to 1949 (CS-G photographs: 232_005_00416 & 232_005_00417)

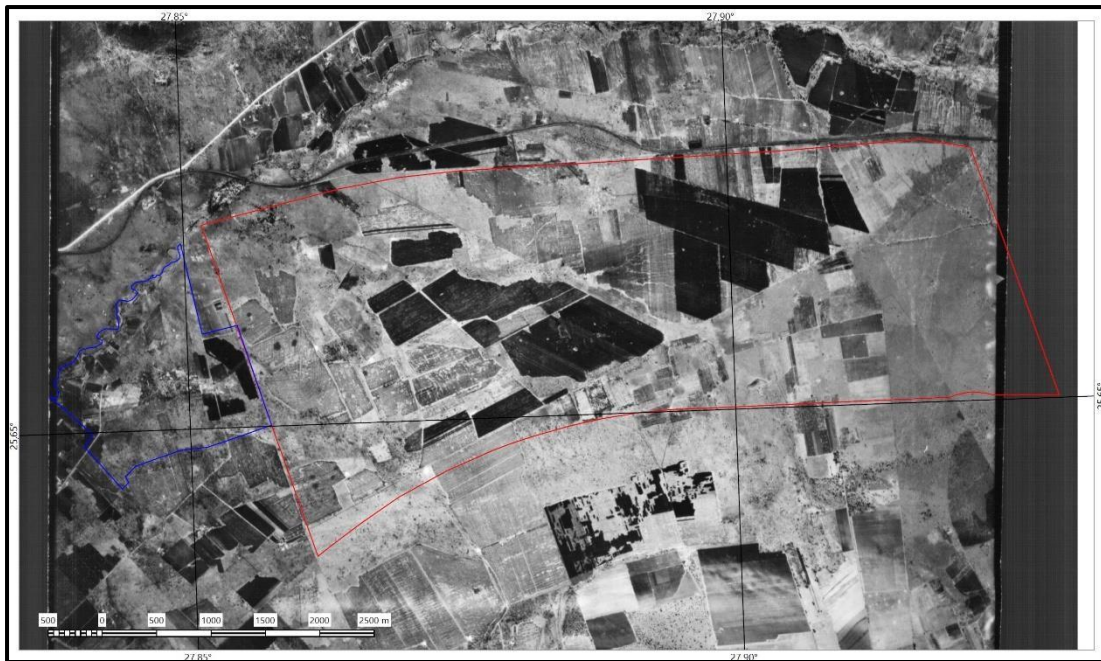


Figure 10. Aerial view of the study region dating to 1964 (CS-G photograph: 456_003_08646)

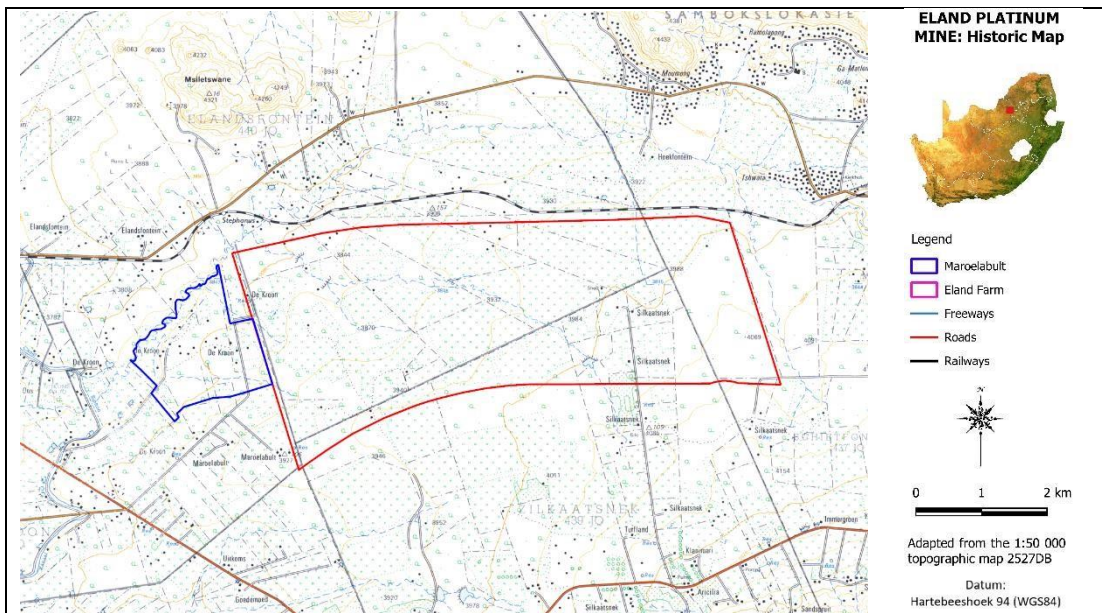


Figure 11. The study region on the 1968 version of the 1:50 000 topographic map



Figure 12. Aerial view of the study area dating to 2004 (Image: Google Earth)



Figure 13. Aerial view of the study area dating to 2020 (Image: Google Earth)

7. SURVEY RESULTS

During the physical survey, the following sites, features and objects of cultural significance were identified in the study area (Fig. 14).

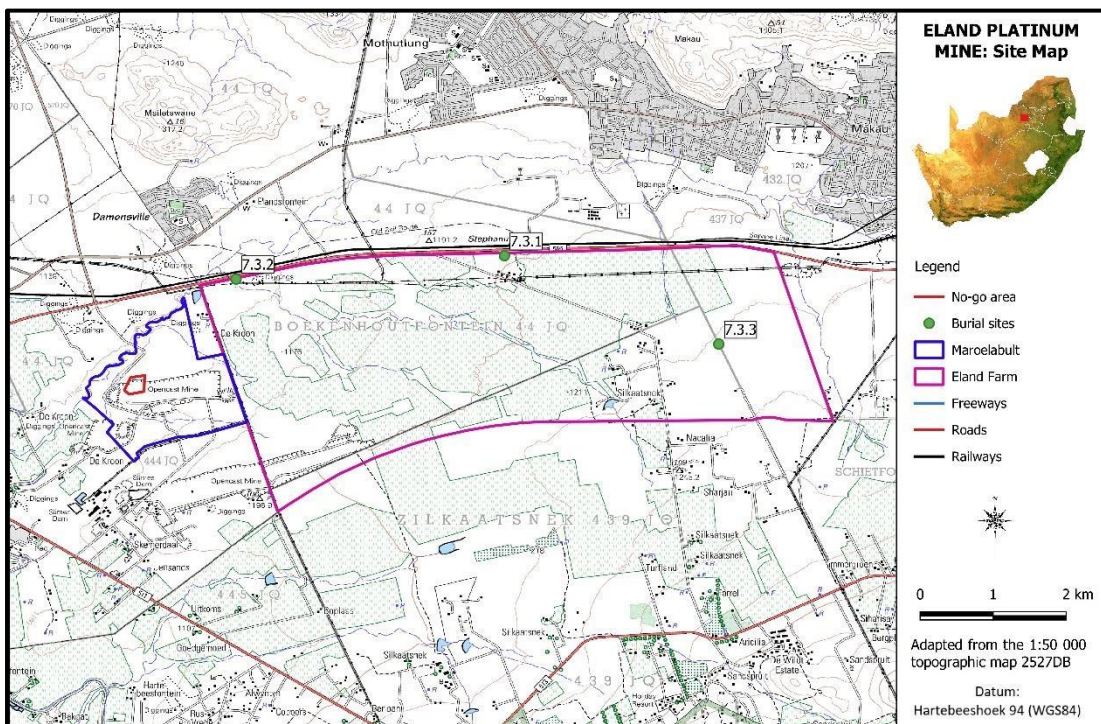


Figure 14. Location of heritage sites in the study area (Please note that on this version of the topographic map this section of the farm is wrongly identified as Boekenhoutfontein 44-JQ – refer to Fig. 2 above - <https://csg.esri-southafrica.com/spatialdata viewer/> for confirmation of this interpretation)

7.1 Stone Age

- No sites, features or objects of cultural significance dating to the Stone Age were identified in the study area

7.2 Iron Age

NHRA Category	Archaeological resources – Section 35
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7.1.1 Type: Settlement sites **Farm:** De Kroon 444 JQ **Coordinates:** S 25,64539; E 27,84394

Description

Huffman (2000) identified some LIA material, as well as contemporary homesteads and possible graves in this area. As the vegetation cover was very dense during the site visit and as some recent mining structures were installed here, these sites and features could not be verified.



General view of the area





New firebreaks

Significance of site/feature	Generally protected: Medium significance – Grade IV-B
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Reasoned opinion:
<ol style="list-style-type: none"> 1. Iron Age sites located away from the hills and larger outcrops are limited 2. Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.
References
Huffman 2000



7.3 Historic period



NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
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7.3.1 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,62944; E 27,88917	
Description	
A very large burial site with at least 70 graves. It is still in use and new graves were noticed. The site is fenced off and has a gate for access.	
	
General view of the burial site	Close-up view of some of the graves

Significance of site/feature	Generally protected: High significance – Grade IV-A
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.	
References	
Pistorius 2006	

7.3.2 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,63231; E 27,85613	
Description	
Informal burial site with two graves marked with headstone and possible two others that are only marked with stone cairns. The site is fenced off and has a gate for access.	

			
General view of the burial site		Close-up view of the graves	
Significance of site/feature	Generally protected: High significance – Grade IV-A		
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.			
References			
Pistorius 2006			

7.3.3 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,64031; E 27,91556	
Description	
Informal burial site with two or possibly three graves. The graves are only marked with stone cairns. The site is fenced off and has a gate for access.	
	
	
General overview of the burial site	
Close-up view of the graves	

Significance of site/feature	Generally protected: High significance – Grade IV-A		
Reasoned opinion: Burial sites are viewed as having high emotional and sentimental value. However, mitigation is possible if proper procedures have been followed.			
References			
Pistorius 2010			

8. IMPACT ASSESSMENT RATINGS AND MITIGATION MEASURES

8.1 Impact assessment

Heritage impacts are categorised as:

- Direct or physical impacts, implying alteration or destruction of heritage features within the project boundaries;
- Indirect impacts, e.g. restriction of access or visual intrusion concerning the broader environment;
- Cumulative impacts that are combinations of the above.

Impact analysis of cultural heritage resources under threat of the proposed mining activities is based on the present understanding of the EP Proposed Projects and is summarised in Table 2 below:

Table 2: Calculation of the impact on the identified heritage features

NHRA Category	Archaeological resources – Section 35	
7.1.1 Type: Settlement sites Farm: De Kroon 444 JQ Coordinates: S 25,64539; E 27,84394		
Impact assessment		
Although these sites are located inside the larger mining area, it is unlikely that they would be impacted on, as the mining activities would mostly be done subsurface.		
Requirements		
Conservation by local authority. Sites should be mitigated before impact. If there is to be an impact, a permit required from provincial heritage authority.		
Nature: This site is located just outside the study area and theoretically there would therefore be no impact on them by the proposed development.		
	Without mitigation	With mitigation
Extent	Local area (1)	Local area (1)
Duration	Permanent (5)	Permanent (5)
Intensity	Moderate (6)	Minor (2)
Probability	Highly probable (4)	Improbable (2)
Significance	Medium (48)	Low (16)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Mitigation: Avoidance of site		
Cumulative impact: Loss of a limited number of similar features in the larger landscape.		

NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36	
7.3.1 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,62944; E 27,88917		
7.3.2 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,63231; E 27,85613		
7.3.3 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,64031; E 27,91556		
Impact assessment		
Although these sites are located inside the larger mining area, it is unlikely that they would be impacted on, as the mining activities would mostly be done subsurface. The sites are also well-known to the mine management and have already been fenced off.		
Requirements		
Conservation by local authority. Sites should be mitigated before impact. If there is to be an impact a permit would be required from provincial heritage authority, as well as other institutions – see Section 4 of the Addendum.		

Nature: This site is located just outside the study area and theoretically there would therefore be no impact on them by the proposed development.		
	Without mitigation	With mitigation
Extent	Local area (1)	Local area (1)
Duration	Permanent (5)	Permanent (5)
Intensity	Moderate (6)	Minor (2)
Probability	Improbable (2)	Improbable (2)
Significance	Low (24)	Low (16)
Status (positive or negative)	Negative	Neutral
Reversibility	Non-reversible	Non-reversible
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated	Yes	
Mitigation: Avoidance of site.		
Cumulative impact: Limited loss of similar features in the larger landscape.		

8.2 Mitigation measures

Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

NHRA Category	Archaeological resources – Section 35
7.1.1 Type: Settlement sites Farm: De Kroon 444 JQ Coordinates: S 25,64539; E 27,84394	
Mitigation	
<p>(1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained <i>in situ</i> and a buffer zone should be created around it.</p> <ul style="list-style-type: none"> • A polygon was created (see below, as well as the Technical Summary above) representing a safety zone to protect the identified sites (Huffman 2000) and thereby avoid further damage. 	
Requirements	
If there is to be an impact, a permit required from provincial heritage authority.	



NHRA Category	Graves, Cemeteries and Burial Grounds - Section 36
7.3.1 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,62944; E 27,88917	
7.3.2 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,63231; E 27,85613	
7.3.3 Type: Burial site. Farm: Elandsfontein 440 JQ Coordinates: S 25,64031; E 27,91556	
Mitigation	
(1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained <i>in situ</i> and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall).	
Requirements	
See Addendum Section 4	

9. MANAGEMENT MEASURES

Heritage sites are fixed features in the environment, occurring within specific spatial confines. Any impact upon them is permanent and non-reversible. Those resources that cannot be avoided and are directly impacted by the proposed development can be excavated/recorded and a management plan can be developed for future action. Those sites that are not impacted on can be written into the management plan, whence they can be avoided or cared for in the future.

Sources of risk were considered with regards to development activities defined in Section 2(viii) of the NHRA that may be triggered and are summarised in Tables 3A and 3B below. These issues formed the basis of the impact assessment described. The potential risks are discussed according to the various phases of the project below.

9.1 Objectives

- Protection of archaeological, historical and any other site or land considered being of cultural value within the Project Area against vandalism, destruction and theft.
- The preservation and appropriate management of new discoveries in accordance with the NHRA, should these be discovered during construction activities.

The following shall apply:

- Known sites should be clearly marked, so that they can be avoided during construction activities.
- The contractors and workers should be notified that archaeological sites might be exposed during the construction activities.
- Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered shall cease immediately and the Environmental Control Officer (ECO) shall be notified as soon as possible;
- All discoveries shall be reported immediately to a heritage practitioner, so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the ECO will advise the necessary actions to be taken;
- Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and
- Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the NHRA, Section 51(1).

9.2 Control

In order to achieve this, the following should be in place:

- A person or entity, e.g. the ECO, should be tasked to take responsibility for the heritage sites and held accountable for any damage.
- Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the ECO as identified above.
- In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.

Table 3A: Construction Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	The identified risk is damage or changes to resources that are generally protected in terms of Sections 33 to 37 of the NHRA that may occur in the Project Area.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance.		
Activity / issue	Mitigation: Action/control	Responsibility	Timeframe
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above.		

Table 3B: Operation Phase: Environmental Management Programme for the project

Action required	Protection of heritage sites, features and objects		
Potential Impact	It is unlikely that the negative impacts identified for pre-mitigation will occur if the recommendations are followed.		
Risk if impact is not mitigated	Loss or damage to sites, features or objects of cultural heritage significance		
Activity / issue	Mitigation: Action/control	Responsibility	Timeframe
1. Removal of Vegetation 2. Construction of required infrastructure, e.g. access roads, water pipelines	See discussion in Section 9.1 above	Environmental Control Officer	During construction only
Monitoring	See discussion in Section 9.2 above		

10. CONCLUSIONS AND RECOMMENDATIONS

EP recently purchased the Sale Portion, adjacent to the EM, in the Madibeng Local Municipality of North West Province. The objective of the purchase is to ultimately connect the mining areas with each other.

This report describes the methodology used, limitations encountered, heritage features that were identified and recommendations and mitigation measures proposed relevant to this. The HIA consisted of a desktop study (archival sources, database survey, maps and aerial imagery) and a physical survey that included the interviewing of relevant people. It should be noted that the implementation of the mitigation measures is subject to SAHRA/PHRA and DMREs' approval.

The Palaeontological Sensitivity Map (SAHRIS) indicate that the study area has an insignificant to zero possibility of fossil remains to be found and therefore no palaeontological assessment is required.

Identified sites

During the physical survey, the following sites, features or objects of cultural significance were identified:

- 7.1.1 Huffman (2000) identified some LIA material, contemporary homesteads and possible graves in this area. As the vegetation cover was very dense during the site visit and some recent mining structures were installed here, these sites and features could not be verified.
- 7.3.1 – 7.3.3 Three different burial sites were identified, which are all known to the mine management and has been fenced off.

Impact assessment and proposed mitigation measures

Impact analysis of cultural heritage resources under threat of the EP Proposed Projects is based on the present understanding of the Project:

Site No.	Site type	NHRA category	Field rating	Impact rating: Before/After mitigation
7.1.1	Archaeological resources	Section 35	Generally protected: Medium significance – Grade IV-B	Low (48)
7.3.1 – 7.3.3	Graves, cemeteries and burial grounds	Section 36	Generally protected: High significance – Grade IV-A	Low (24)
				Low (16)

For the current study, the following mitigation measures are proposed:

- 7.1.1 (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it.
 - A polygon was created (see the Technical Summary above) representing a safety zone to protect the identified sites (Huffman 2000) and thereby avoid further damage.
- 7.3.1 – 7.3.3 (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall).

Legal requirements

The legal requirements related to heritage specifically are specified in Section 3 of this report. For the EP Proposed Projects, the assessment has determined that no sites, features or objects of heritage significance occur in the study area. If heritage features are identified during construction, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

Reasoned opinion as to whether the proposed activity should be authorised:

- From a heritage point of view, it is recommended that the EP Proposed Projects be allowed to continue, on acceptance of the conditions proposed below.

Conditions for inclusion in the environmental authorisation:

- The various mitigation measures as presented in Section 8 of this report should be implemented.
- Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

11. REFERENCES

11.1 Data bases

Chief Surveyor General
Environmental Potential Atlas, Department of Environmental Affairs and Tourism.
Heritage Atlas Database, Pretoria
National Archives of South Africa
SAHRA Archaeology and Palaeontology Report Mapping Project (2009)
SAHRIS Database

11.2 Literature

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- Van Schalkwyk, J.A. 2007b. *Heritage Survey report for the proposed development on a Portion of the farm De Kroon 444JQ, to be known as Brits Ext. 135, in the Brits Magisterial District, North West Province*. Pretoria: Unpublished report 2007JvS040.
- Van Schalkwyk, J.A. 2010a. *Heritage impact assessment for the proposed N4 Platinum Toll Highway upgrade, Rustenburg to Zeerust, North West Province*. Pretoria: Unpublished report 2010/JvS/081.
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11.3 Archival sources, maps and aerial photographs

1: 50 000 Topographic maps

Google Earth

Aerial Photographs: Chief Surveyor-General <http://vmus.adu.org.za>

12. ADDENDUM

1. Indemnity and terms of use of this report

The findings, results, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information. The report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken and the author reserve the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

Although all possible care is taken to identify all sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the study. The author of this report will not be held liable for such oversights or for costs incurred as a result of such oversights.

Although the author exercises due care and diligence in rendering services and preparing documents, he accepts no liability and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the author and by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

2. Assessing the significance of heritage resources and potential impacts

A system for site grading was established by the NHRA and further developed by the SAHRA (SAHRA 2007) and has been approved by ASAPA for use in southern Africa and was utilised during this assessment.

2.1 Significance of the identified heritage resources

According to the NHRA, Section 2(vi) the **significance** of a heritage sites and artefacts is determined by its aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technical value in relation to the uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

Matrix used for assessing the significance of each identified site/feature

1. SITE EVALUATION				
1.1 Historic value				
Is it important in the community, or pattern of history				
Does it have strong or special association with the life or work of a person, group or organisation of importance in history				
Does it have significance relating to the history of slavery				
1.2 Aesthetic value				
It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group				
1.3 Scientific value				
Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage				
Is it important in demonstrating a high degree of creative or technical achievement at a particular period				
1.4 Social value				
Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons				
1.5 Rarity				
Does it possess uncommon, rare or endangered aspects of natural or cultural heritage				
1.6 Representivity				
Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects				
Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class				
Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality.				
2. Sphere of Significance		High	Medium	Low
International				
National				
Provincial				
Regional				
Local				
Specific community				
3. Field Register Rating				
1.	National/Grade 1: High significance - No alteration whatsoever without permit from SAHRA			
2.	Provincial/Grade 2: High significance - No alteration whatsoever without permit from provincial heritage authority.			
3.	Local/Grade 3A: High significance - Mitigation as part of development process not advised.			
4.	Local/Grade 3B: High significance - Could be mitigated and (part) retained as heritage register site			

5.	Generally protected 4A: High/medium significance - Should be mitigated before destruction	
6.	Generally protected 4B: Medium significance - Should be recorded before destruction	
7.	Generally protected 4C: Low significance - Requires no further recording before destruction	

2.2 Significance of the anticipated impact on heritage resources

All impacts identified during the HIA stage of the study will be classified in terms of their significance. Issues would be assessed in terms of the following criteria:

Nature of the impact

A description of what causes the effect, what will be affected and how it will be affected.

Extent

The physical **extent**, wherein it is indicated whether:

- 1 - The impact will be limited to the site;
- 2 - The impact will be limited to the local area;
- 3 - The impact will be limited to the region;
- 4 - The impact will be national; or
- 5 - The impact will be international.

Duration

Here it should be indicated whether the lifespan of the impact will be:

- 1 - Of a very short duration (0–1 years);
- 2 - Of a short duration (2-5 years);
- 3 - Medium-term (5–15 years);
- 4 – Long-term (where the impact will persist possibly beyond the operational life of the activity); or
- 5 - Permanent (where the impact will persist indefinitely).

Magnitude (Intensity)

The magnitude of impact, quantified on a scale from 0-10, where a score is assigned:

- 0 - Small and will have no effect;
- 2 - Minor and will not result in an impact;
- 4 - Low and will cause a slight impact;
- 6 - Moderate and will result in processes continuing but in a modified way;
- 8 - High, (processes are altered to the extent that they temporarily cease); or
- 10 - Very high and results in complete destruction of patterns and permanent cessation of processes.

Probability

This describes the likelihood of the impact actually occurring and is estimated on a scale where:

- 1 - Very improbable (probably will not happen);
- 2 - Improbable (some possibility, but low likelihood);
- 3 - Probable (distinct possibility);
- 4 - Highly probable (most likely); or
- 5 - Definite (impact will occur regardless of any prevention measures).

Significance

The significance is determined through a synthesis of the characteristics described above (refer to the formula below) and can be assessed as low, medium or high:

$S = (E+D+M) \times P$; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

Significance of impact		
Points	Significant Weighting	Discussion
< 30 points	Low	Where this impact would not have a direct influence on the decision to develop in the area.
31-60 points	Medium	Where the impact could influence the decision to develop in the area unless it is effectively mitigated.
> 60 points	High	Where the impact must have an influence on the decision process to develop in the area.

Confidence

This should relate to the level of confidence that the specialist has in establishing the nature and degree of impacts. It relates to the level and reliability of information, the nature and degree of consultation with I&APs and the dynamic of the broader socio-political context.

- High, where the information is comprehensive and accurate, where there has been a high degree of consultation and the socio-political context is relatively stable.
- Medium, where the information is sufficient but is based mainly on secondary sources, where there has been a limited targeted consultation and socio-political context is fluid.
- Low, where the information is poor, a high degree of contestation is evident and there is a state of socio-political flux.

Status

- The status, which is described as either positive, negative or neutral.

Reversibility

- The degree to which the impact can be reversed.

Mitigation

- The degree to which the impact can be mitigated.

Nature:		
	Without mitigation	With mitigation
Construction Phase		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		
Operation Phase		
Probability		
Duration		
Extent		
Magnitude		
Significance		
Status (positive or negative)		

Reversibility		
Irreplaceable loss of resources?		
Can impacts be mitigated		

3. Mitigation measures

- *Mitigation: means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.*

Impacts can be managed through one or a combination of the following mitigation measures:

- Avoidance
- Investigation (archaeological)
- Rehabilitation
- Interpretation
- Memorialisation
- Enhancement (positive impacts)

For the current study, the following mitigation measures are proposed, to be implemented only if any of the identified sites or features are to be impacted on by the proposed development activities:

- (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and applies where any type of development occurs within a formally protected or significant or sensitive heritage context and is likely to have a high negative impact. This measure often includes the change / alteration of development planning and therefore impact zones in order not to impact on resources. The site should be retained *in situ* and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Depending on the type of site, the buffer zone can vary from ○ 10 metres for a single grave, or a built structure, to ○ 50 metres where the boundaries are less obvious, e.g. a LIA site.
- (2) Archaeological investigation/Relocation of graves: This option can be implemented with additional design and construction inputs. This is appropriate where development occurs in a context of heritage significance and where the impact is such that it can be mitigated. Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. This can only be done by a suitably qualified archaeologist.
 - This option should be implemented when it is impossible to avoid impacting on an identified site or feature.
 - This also applies for graves older than 60 years that are to be relocated. For graves younger than 60 years a permit from SAHRA is not required. However, all other legal requirements must be adhered to.
 - ✦ Impacts can be beneficial – e.g. mitigation contribute to knowledge
- (3) Rehabilitation: When features, e.g. buildings or other structures are to be reused. Rehabilitation is considered in heritage management terms as an intervention typically involving the adding of a new heritage layer to enable a new sustainable use.
 - The heritage resource is degraded or in the process of degradation and would benefit from rehabilitation.
 - Where rehabilitation implies appropriate conservation interventions, i.e. adaptive reuse, repair and maintenance, consolidation and minimal loss of historical fabric.
 - ✦ Conservation measures would be to record the buildings/structures as they are (at a particular point in time). The records and recordings would then become the ‘artefacts’ to be preserved and managed as heritage features or (movable) objects.
 - ✦ This approach automatically also leads to the enhancement of the sites or features that are re-used.

- (4) Mitigation is also possible with additional design and construction inputs. Although linked to the previous measure (rehabilitation), a secondary though 'indirect' conservation measure would be to use the existing architectural 'vocabulary' of the structure as guideline for any new designs.
 - The following principle should be considered: **heritage informs design**.
 - ✦ This approach automatically also leads to the enhancement of the sites or features that are reused.
- (5) No further action required: This is applicable only where sites or features have been rated to be of such low significance that it does not warrant further documentation, as it is viewed to be fully documented after inclusion in this report.
 - Site monitoring during development, by an ECO or the heritage specialist are often added to this recommendation, to ensure that no undetected heritage/remains are destroyed.

4. Relocation of graves

If the graves are younger than 60 years, an undertaker can be contracted to deal with the exhumation and reburial. This will include public participation, organising cemeteries, coffins, etc. They need permits and have their own requirements that must be adhered to.

If the graves are older than 60 years old or of undetermined age, an archaeologist must be in attendance to assist with the exhumation and documentation of the graves. This is a requirement by law.

Once it has been decided to relocate particular graves, the following steps should be taken:

- Notices of the intention to relocate the graves need to be put up at the burial site for a period of 60 days. This should contain information where communities and family members can contact the developer/archaeologist/public-relations officer/undertaker. All information pertaining to the identification of the graves needs to be documented for the application of a SAHRA permit. The notices need to be in at least 3 languages, English, and two other languages. This is a requirement by law.
- Notices of the intention needs to be placed in at least two local newspapers and have the same information as the above point. This is a requirement by law.
- Local radio stations can also be used to try contact family members. This is not required by law but is helpful in trying to contact family members.
- During this time (60 days) a suitable cemetery needs to be identified close to the development area or otherwise one specified by the family of the deceased.
- An open day for family members should be arranged after the period of 60 days so that they can gather to discuss the way forward, and to sort out any problems. The developer needs to take the families requirements into account. This is a requirement by law.
- Once the 60 days has passed and all the information from the family members have been received, a permit can be requested from SAHRA. This is a requirement by law.
- Once the permit has been received, the graves may be exhumed and relocated.
- All headstones must be relocated with the graves, as well as any items found in the grave.

Information needed for the SAHRA permit application

- The permit application needs to be done by an archaeologist.
- A map of the area where the graves have been located.
- A survey report of the area prepared by an archaeologist.
- All the information on the families that have identified graves.
- If graves have not been identified and there are no headstones to indicate the grave, these are then unknown graves and should be handled as if they are older than 60 years. This information also needs to be given to SAHRA.
- A letter from the landowner giving permission to the developer to exhume and relocate the graves.
- A letter from the new cemetery confirming that the graves will be reburied there.

- Details of the farm name and number, magisterial district and GPS coordinates of the gravesite.

5. Curriculum vitae

Johan Abraham van Schalkwyk

Personal particulars

Date of birth: 14 April 1952
Identity number: 520414 5099 08 4
Marital status: Married; one daughter
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Qualifications

1995 DLitt et Phil (Anthropology), University of South Africa
1985 MA (Anthropology), University of Pretoria
1981 BA (Hons), Anthropology, University of Pretoria
1979 Post Graduate Diploma in Museology, University of Pretoria
1978 BA (Hons), Archaeology, University of Pretoria
1976 BA, University of Pretoria

Non-academic qualifications

12th HSRC-School in Research Methodology - July 1990
Dept. of Education and Training Management Course - June 1992
Social Assessment Professional Development Course - 1994
Integrated Environmental Management Course, UCT - 1994

Professional experience

Private Practice
2017 - current: Professional Heritage Consultant

National Museum of Cultural History

1992 - 2017: Senior researcher: Head of Department of Research. Manage an average of seven researchers in this department and supervise them in their research projects. Did various projects relating to Anthropology and Archaeology in Limpopo Province, Mpumalanga, North West Province and Gauteng. Headed the Museum's Section for Heritage Impact Assessments.

1978 - 1991: Curator of the Anthropological Department of the Museum. Carried out extensive fieldwork in both anthropology and archaeology

Department of Archaeology, University of Pretoria

1976 - 1977: Assistant researcher responsible for excavations at various sites in Limpopo Province and Mpumalanga.

Awards and grants

1. Hanisch Book Prize for the best final year Archaeology student, University of Pretoria - 1976.
2. Special merit award, National Cultural History Museum - 1986.
3. Special merit award, National Cultural History Museum - 1991.
4. Grant by the Department of Arts, Culture, Science and Technology, to visit the various African countries to study museums, sites and cultural programmes - 1993.
5. Grant by the USA National Parks Service, to visit the United States of America to study museums, sites, tourism development, cultural programmes and impact assessment programmes - 1998.
6. Grant by the USA embassy, Pretoria, under the Bi-national Commission Exchange Support Fund, to visit cultural institutions in the USA and to attend a conference in Charleston - 2000.

7. Grant by the National Research Foundation to develop a model for community-based tourism - 2001.
8. Grant by the National Research Foundation to develop a model for community-based tourism - 2013. In association with RARI, Wits University.

Publications

Published more than 70 papers, mostly in scientifically accredited journals, but also as chapters in books.

Conference Contributions

Regularly presented papers at conferences, locally as well as internationally, on various research topics, ranging in scope from archaeology, anthropological, historical, cultural historical and tourism development.

Heritage Impact Assessments

Since 1992, I have done more than 2000 Phase 1 and Phase 2 impact assessments (archaeological, anthropological, historical and social) for various government departments and developers. Projects include environmental management frameworks, roads, pipeline-, and power line developments, dams, mining, water purification works, historical landscapes, refuse dumps and urban developments.